

WE CLAIM:

1. An image feature amount acquisition apparatus for acquiring a feature amount of an image by subjecting image data of the image expressed in pixels in a dot matrix form to statistical calculation processing, the apparatus comprising:
  - a thumbnail presence/absence judging unit which judges whether said image data have thumbnail data in addition to an original image data;
- 10 a thumbnail statistical calculation unit which acquires thumbnail data from said image data and performs statistical calculation for the thumbnail data;
- 15 a sampling and statistical calculation unit which samples said original image data and performs statistical calculation for the sampled data;
- 20 a precision selecting unit which selects a level of precision required for said feature amount;
- 25 a statistical calculation selecting unit which selects either said thumbnail statistical calculation unit or said sampling and statistical calculation unit by using the result of selection by said precision selecting unit and the result of judgment by said thumbnail presence/absence judging unit; and
- a feature amount acquisition unit which acquires a feature amount characterizing said original image data by using the obtained statistical calculation result.

2. An image feature amount acquisition apparatus, as

claimed in claim 1, wherein said statistical calculation selecting unit selects said thumbnail statistical calculation unit when there are said thumbnail data and the level of precision required for said feature amount is not so high and 5 selects said sampling and statistical calculation unit in other cases.

3. An image feature amount acquisition apparatus, as claimed in claim 1, wherein the precision level of said feature 10 amount matches an image quality required in image correction processing.

4. An image feature amount acquisition apparatus, as claimed in claim 1, wherein said thumbnail data are recorded 15 in a compressed form, and said thumbnail statistical calculation unit develops with respect to compressed thumbnail data pixels equivalent to a prescribed number of lines, performs statistical calculation for the developed image data and repeats this sequence until it is finished for all the 20 lines.

5. An image feature amount acquisition apparatus, as claimed in claim 4, wherein said thumbnail statistical calculation unit secures a buffer in which at least two units 25 of bit map images each in the smallest developable unit can be recorded, develops the bit map images in succession and performs statistical calculation for the developed bit map images.

6. An image feature amount acquisition apparatus, as claimed in claim 4, wherein said thumbnail statistical calculation unit acquires an image size in advance, and starts 5 statistical calculation after computing and securing a required buffer capacity.

7. An image feature amount acquisition method for acquiring a feature amount of an image by subjecting image data 10 of the image expressed in pixels in a dot matrix form to statistical calculation processing, the method comprising:

a thumbnail presence/absence judging step of judging whether said image data have thumbnail data in addition to an original image data;

15 a thumbnail statistical calculation step of acquiring thumbnail data from said image data and performing statistical calculation for the thumbnail data;

a sampling and statistical calculation step of sampling said original image data and performing statistical 20 calculation for the sampled data;

a precision selecting step of selecting a level of precision required for said feature amount;

a statistical calculation selecting step of selecting either said thumbnail statistical calculation step or said 25 sampling and statistical calculation step by using the result of selection at said precision selecting step and the result of judgment at said thumbnail presence/absence judging step; and

a feature amount acquisition step of acquiring a feature amount characterizing said original image data by using the obtained statistical calculation result.

5        8. An image feature amount acquisition method, as claimed in claim 7, wherein at said statistical calculation selecting step said thumbnail statistical calculation step is selected when there are said thumbnail data and the level of precision required for said feature amount is not so high and said  
10      sampling and statistical calculation step is selected in other cases.

9. An image feature amount acquisition method, as claimed in claim 7, wherein the precision level of said feature amount  
15      matches an image quality required in image correction processing.

10. An image feature amount acquisition method, as claimed in claim 7, wherein said thumbnail data are recorded  
20      in a compressed form, and at said thumbnail statistical calculation step pixels equivalent to a prescribed number of lines are developed with respect to compressed thumbnail data, statistical calculation is performed for the developed image data, and this sequence is repeated until it is finished for  
25      all the lines.

11. An image feature amount acquisition method, as claimed in claim 10, wherein at said thumbnail statistical

calculation step a buffer in which at least two units of bit map images each in the smallest developable unit can be recorded is secured, and the bit map images are developed in succession and statistical calculation is performed for the developed bit  
5 map images.

12. An image feature amount acquisition method, as claimed in claim 10, wherein at said thumbnail statistical calculation step an image size is acquired in advance, and  
10 statistical calculation is initiated after a required buffer capacity is computed and secured.

13. A medium recording thereon an image feature amount acquisition program for causing a computer to acquire a feature amount of an image by subjecting image data of the image expressed in pixels in a dot matrix form to statistical calculation processing, said program enabling a computer to realize:

a thumbnail presence/absence judging function of  
20 judging whether said image data have thumbnail data in addition to an original image data;

a thumbnail statistical calculation function of acquiring thumbnail data from said image data and performing statistical calculation for the thumbnail data;

25 a sampling and statistical calculation function of sampling said original image data and performing statistical calculation for the sampled data;

a precision selecting function of selecting the level

of precision required for said feature amount;

a statistical calculation selecting function of selecting and implementing either said thumbnail statistical calculation function or said sampling and statistical calculation function by using the result of selection by said precision selecting function and the result of judgment by said thumbnail presence/absence judging function; and

a feature amount acquisition function of acquiring a feature amount characterizing said original image data by using the obtained statistical calculation result.

14. A medium recording thereon an image feature amount acquisition program, as claimed in claim 13, wherein said statistical calculation selecting function selects said thumbnail statistical calculation unit when there are said thumbnail data and the level of precision required for said feature amount is not so high and selects said sampling and statistical calculation function in other cases.

20 15. A medium recording thereon an image feature amount acquisition program, as claimed in claim 13, wherein the precision level of said feature amount matches the image quality required in image correction processing.

25 16. A medium recording thereon an image feature amount acquisition program, as claimed in claim 13, wherein said thumbnail data are recorded in a compressed form, and said thumbnail statistical calculation function develops with

respect to compressed thumbnail data pixels equivalent to a prescribed number of lines, performs statistical calculation for the developed image data and repeats this sequence until it is finished for all the lines.

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17. A medium recording thereon an image feature amount quantity acquisition program, as claimed in claim 16, wherein said thumbnail statistical calculation function secures a buffer in which at least two units of bit map images each in 10 the smallest developable unit can be recorded, develops the bit map images in succession and performs statistical calculation for the developed bit map images.

18. A medium recording thereon an image feature amount 15 acquisition program, as claimed in claim 16, wherein said thumbnail statistical calculation function acquires an image size in advance, and starts statistical calculation after computing and securing a required buffer capacity.

20 19. An image correcting apparatus for acquiring a feature amount of an image by subjecting image data of the image expressed in pixels in a dot matrix form to statistical calculation processing, determining correcting parameters by using the feature amount, and correcting the image, the 25 apparatus comprising:

a thumbnail presence/absence judging unit which judges whether said image data have thumbnail data in addition to an original image data;

a thumbnail statistical calculation unit which acquires thumbnail data from said image data and performs statistical calculation for the thumbnail data;

5 a sampling and statistical calculation unit which samples said original image data and performs statistical calculation for the sampled data;

a selecting unit which selects a level of precision required for said feature amount;

10 a statistical calculation selecting unit which selects either said thumbnail statistical calculation unit or said sampling and statistical calculation unit by using the result of selection by said precision selecting unit and the result of judgment by said thumbnail presence/absence judging unit;

15 a feature amount acquisition unit which acquires a feature amount characterizing said original image data by using the obtained statistical calculation result;

a parameter computing unit which computes correcting parameters by using said feature amount; and

20 an image correcting unit which subjects said original image data to image correction processing by using the computed correcting parameters.

20. An image correcting method for acquiring a feature amount of an image by subjecting image data of the image expressed in pixels in a dot matrix form to statistical calculation processing, determining correcting parameters by using the feature amount, and correcting the image, the method comprising:

a thumbnail presence/absence judging step of judging whether said image data have thumbnail data in addition to an original image data;

5 a thumbnail statistical calculation step of acquiring thumbnail data from said image data and performing statistical calculation for the thumbnail data;

a sampling and statistical calculation step of sampling said original image data and performing statistical calculation for the sampled data;

10 a selecting step of selecting the level of precision required for said feature amount;

a statistical calculation selecting step of selecting either said thumbnail statistical calculation step or said sampling and statistical calculation step by using the result 15 of selection at said precision selecting step and the result of judgment at said thumbnail presence/absence judging step;

a feature amount acquisition step of acquiring a feature amount characterizing said original image data by using the obtained statistical calculation result;

20 a parameter computing step of computing correcting parameters by using said feature amount; and

an image correcting step of subjecting said original image data to image correction processing by using the computed correcting parameters.

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21. A medium recording thereon an image correcting program for causing a computer to acquire a feature amount of an image by subjecting image data of the image expressed in

pixels in a dot matrix form to statistical calculation processing, to determine correcting parameters by using the feature amount, and to correct the image, said program enabling a computer to realize:

5 a thumbnail presence/absence judging function of judging whether said image data have thumbnail data in addition to an original image data;

10 a thumbnail statistical calculation function of acquiring thumbnail data from said image data and performing statistical calculation for the thumbnail data;

15 a sampling and statistical calculation function of sampling said original image data and performing statistical calculation for the sampled data;

20 a selecting function of selecting a level of precision required for said feature amount;

25 a statistical calculation selecting function of selecting either said thumbnail statistical calculation function or said sampling and statistical calculation function by using the result of selection by said precision selecting function and the result of judgment by said thumbnail presence/absence judging function;

30 a feature amount acquisition function of acquiring a feature amount characterizing said original image data by using the obtained statistical calculation result;

35 a parameter computing function of computing correcting parameters by using said feature amount; and

40 an image correcting function of subjecting said original image data to image correction processing by using the computed

correcting parameters.

22. A printer which acquires a feature amount of an image by subjecting image data of the image expressed in pixels in 5 a dot matrix form to statistical calculation processing, determines correcting parameters by using the feature amount, and corrects and prints the image, the printer comprising:

an image data selecting unit which selects image data from a memory card recording thereon the image data including 10 an original image data in a compressed form;

an image quality selecting unit which selects a quality level of image processing;

an image data reading unit which read said selected image data out of said memory card;

15 a thumbnail presence/absence judging unit which judges whether said image data have thumbnail data in addition to the original image data;

a thumbnail statistical calculation unit which acquires thumbnail data from said image data and performs statistical 20 calculation for the thumbnail data;

a sampling and statistical calculation unit which samples said original image data and performs statistical calculation for the sampled data;

a statistical calculation selecting unit which selects 25 either said thumbnail statistical calculation unit or said sampling and statistical calculation unit by using the result of judgment by said thumbnail presence/absence judging unit and the result of selection by said image quality selecting

unit;

a feature amount acquisition unit which acquires a feature amount characterizing said original image data by using the obtained statistical calculation result;

5 a parameter computing unit which computes correcting parameters by using said feature amount;

an image correcting unit which subjects said original image data to image correction processing while restoring them by using the computed correcting parameters; and

10 a printing unit which executes printing on the basis of the original image data having undergone image correction.

23. A printing method for acquiring a feature amount of an image by subjecting image data of the image expressed in 15 pixels in a dot matrix form to statistical calculation processing, determining correcting parameters by using the feature amount, and correcting and printing the image, the method comprising the steps of:

selecting image data from a memory card recording thereon 20 the image data including an original image data in a compressed form and further selecting the quality of image processing;

reading said selected image data out of said memory card and thereafter, judging whether said image data have thumbnail data in addition to the original image data;

25 selecting either statistical calculation by acquiring thumbnail data from said image data or statistical calculation by sampling said original image data, on the basis of the result of the judgment on the presence or absence of thumbnail data

and said selected quality;

acquiring a feature amount characterizing said original image data by using whichever statistical calculation result is obtained;

5 computing correcting parameters by using the feature amount;

subjecting said original image data to image correction processing by using the computed correcting parameters; and

executing printing on the basis of the original image  
10 data having undergone image correction.

24. A medium recording thereon an image correcting program for causing a computer to acquire a feature amount of an image by subjecting image data of the image expressed in pixels in a dot matrix form to statistical calculation processing, to determine correcting parameters by using the feature amount, and to correct and print the image, the program being characterized in that the program enables the computer to realize:

20 an image data selecting function of selecting image data from a memory card recording thereon image data including an original image data in a compressed form;

an image quality selecting function of selecting a quality level of image processing;

25 an image data reading function of reading said selected image data out of said memory card;

a thumbnail presence/absence judging function of judging whether said image data have thumbnail data in addition

to the original image data;

a thumbnail statistical calculation function of acquiring thumbnail data from said image data and performing statistical calculation for the thumbnail data;

5 a sampling and statistical calculation function of sampling said original image data and performing statistical calculation for the sampled data;

a statistical calculation selecting function for selecting either said thumbnail statistical calculation 10 function or said sampling and statistical calculation function by using the result of judgment by said thumbnail presence/absence judging function and the result of selection by said image quality selecting function;

a feature amount acquisition function of acquiring a 15 feature amount characterizing said original image data by using the obtained statistical calculation result;

a parameter computing function of computing correcting parameters by using said feature amount;

an image correcting function of subjecting said original 20 image data to image correction processing while restoring them by using the computed correcting parameters; and

a printing function of generating and supplying print data on the basis of the original image data having undergone image correction.